Title: Critical Analysis of Government Building Project Failures in Nigeria (Case study of the Nigerian construction Industry).

# Abstract

The aim of this dissertation is to critically analyse the environmental related factors influencing the failure of government building projects in Nigeria in the building construction environment, with the focus on how the identified factors affects the Nigerian Construction Industry as well as hindering the economic growth and development of the country.

The literature review identified various factors influencing the failure of development construction projects in developing countries. The review also showed the potential effects the failure of these development construction projects can cause in developing countries pointing out the economic importance the construction industry can contribute to the growth of other economic sectors of a country.

Research was carried out using the qualitative method with an Interpretivism (Constructivism) approach due to the subjective nature of the study. The three research questions of this project were researched using the above mentioned method and approach with some findings supporting the literature and presenting new results.

Overall, it was found in this study that environmental related factors are of great influence in the building construction environment, thus the success or failure of building construction projects can be determined by its potential effects.

**Keywords:** Nigeria; Construction; Development; Building; Environment; Failure.

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# Abbreviations

BMIG Business Monitor International Group

CIDB Construction Industry Development Board

DB Development Bureau

FEC Federal Executive Council

GDP Gross Domestic Product

JTC Joint Contract Tribunal

MHLGM Ministry of Housing and Local Government in Malaysia

NCI Nigerian Construction Industry

PESTLE Political, Economic, Social, Technology, Legal and Environment

PMI Project Management Institute

RGU Robert Gordon University

SWOT Strength, Weakness, Opportunity, Threat

# **Tables**

Table 1 Fundamental beliefs of research paradigms

Table 2 Comparism between qualitative and quantitative research

Table 3 Semi-structured interview participants

# **Figures**

Figure 1 Failed and abandoned Nigerian national library building project

Figure 2 Failed and abandoned Nigerian national library building project

Figure 3 Contract agreement of the failed Library building project

Figure 4 Research Onion

Figure 5 Research Design

Table of Contents

[ i](#_Toc8935343)

[Copyright Declaration Form ii](#_Toc8935344)

[Abstract iv](#_Toc8935345)

[Acknowledgements v](#_Toc8935346)

[Abbreviations v](#_Toc8935347)

[**Tables** vi](#_Toc8935348)

[**Figures** vi](#_Toc8935349)

[**1.0 Introduction** 1](#_Toc8935350)

[**1.1 Problem Definition** 4](#_Toc8935351)

[**1.2 Aim of Study** 6](#_Toc8935352)

[**1.3 Research Objectives** 6](#_Toc8935353)

[**1.4 Research Questions** 6](#_Toc8935354)

[**2.0 Literature Review** 7](#_Toc8935355)

[**2.1 INTRODUCTION** 7](#_Toc8935356)

[**2.2 Overview of Nigerian Construction Industry** 7](#_Toc8935357)

[**2.3 Building Construction Project Failures** 9](#_Toc8935358)

[**2.4 Environmental Issues** 18](#_Toc8935359)

[**2.5 Summary** 29](#_Toc8935360)

[**3.0 Research Methodology** 30](#_Toc8935361)

[**3.1 Introduction** 30](#_Toc8935362)

[**3.2 Research Philosophy** 31](#_Toc8935363)

[**3.3 Research Design and Method** 34](#_Toc8935364)

[**3.4 Scope of Study** 37](#_Toc8935365)

[**3.5 Data Collection Technique** 38](#_Toc8935366)

[**3.5.1 Primary Data** 38](#_Toc8935367)

[**3.5.2 Secondary Data** 39](#_Toc8935368)

[**3.6 Interviews** 39](#_Toc8935369)

[**3.7 INTERVIEWEES SELECTION** 41](#_Toc8935370)

[**3.8 Research Sampling Technique** 43](#_Toc8935371)

[**Table 3. Semi-structured interview participants** 44](#_Toc8935372)

[**3.9 Case Study Analysis** 45](#_Toc8935373)

[**3.10 Ethical Considerations** 46](#_Toc8935374)

[**3.11 Research Limitation** 47](#_Toc8935375)

[**3.12 Summary** 47](#_Toc8935376)

[**4.0 Analysis of the Nigerian Construction Industry Environment.** 49](#_Toc8935377)

[**4.1 Introduction** 49](#_Toc8935378)

[**4.2 POLITICAL Related Factors** 49](#_Toc8935379)

[**4.3 Economic Related Factors** 52](#_Toc8935380)

[**4.4 Social Related Factors** 54](#_Toc8935381)

[**4.5 Technology Related Factors** 56](#_Toc8935382)

[**4.6 Legal Related Factors** 58](#_Toc8935383)

[**4.7 Environmental Related Factors** 60](#_Toc8935384)

[**4.8 Summary** 62](#_Toc8935385)

[**5.0 Conclusions, Recommendations and Further Work** 64](#_Toc8935386)

[**5.1** **Introduction** 64](#_Toc8935387)

[**5.2 How can building construction projects be analysed to determine failures?** 64](#_Toc8935388)

[**5.3 What are the environmental factors influencing building project failures?** 65](#_Toc8935389)

[**5.4 What effects can the identified environmental related factors cause on government building projects?** 67](#_Toc8935390)

[**5.5 Recommendations** 68](#_Toc8935391)

[**5.6 Further Work** 69](#_Toc8935392)

[**References** 70](#_Toc8935393)

[**Appendices** 79](#_Toc8935394)

[Appendix A Interview questions 79](#_Toc8935395)

[**Appendix B** 81](#_Toc8935396)

[**Summary of environmental issues influencing government building projects in Nigeria.** 81](#_Toc8935397)

# **1.0 Introduction**

Nigeria as a developing country operates in a dynamic business environment where ongoing building construction development projects are carried out to foster the future development of the country. A good number of these ongoing projects are successful while some fail to meet up with their desired intentions. According to Adebisi et al. (2018), the efficiency of the Nigerian Construction Industry has been threatened due to the persistent spate of failure and abandoned construction projects in the country. It was noted by Jagboro (2016) that the Ajaokuta Steel Complex which was abandoned in 1980s was the beginning of abandonment of construction infrastructural projects in Nigeria. Similar to Jagboro’s observation, Kontagora (2004) also noted the abandonment of up to 4,000 abandoned and uncompleted construction projects in Nigeria. With regards to these observations, the problems of construction projects abandonment has resulted in the inability to provide buildings for commercial, residential and other purposes in the country which invariably hinders rapid development in the nation (Adebisi Et al. 2018).

Some studies by Alao (2016), Alao and Jagboro (2017), Nzekwe Et al. (2015), Kaming et al. (1997), Ayodele and Alabi (2011), Olalusi and Otunola (2012), Hanachor (2012), Ubani and Ononuju (2013), Ihuah and Benebo (2014), Ewa (2013) and Ikediashi et al. (2014) focused on this important issue of failure and abandonment of construction projects in Nigeria which have given the industry a huge concern up to date. Some considered a trio factor of cost, time and quality as the main driving influences which contributes to project failure and abandonment in the construction industry while some of these studies however considered failure and abandonment as linked occurrences. These studies focused their researches on failed and abandoned development building projects such as educational institution projects, civil engineering projects, infrastructural projects, housing projects which are been sponsored by private and public sectors. A project can be termed as a failure in a situation where such project have exceeded its anticipated time of completion, overruns its estimated cost of expenditure or at the end of its cycle didn’t satisfy the stakeholders requirements and performance criteria (Belassi and Tukel 1996).

Although some authors have argued about the fact construction projects can only be suspended and not abandoned, some however insisted that when construction activities cease within the construction site for a period of time that such project can be termed to be abandoned or failed. Spelman (1993) further gave his opinion on project abandonment or failure as the act of discontinuing activities and/or maintenance works on a developmental project for a certain period of time of a contract agreement with no intentions of returning back to the development. Nwachukwu and Emoh (2011) however opposed this opinion by stating that a project abandonment or failure is an unplanned suspension of the work progress while the project is currently at the phase of execution. This statement therefore opposes the notion of lack of no return as a justification to describe a project failure rather relates project abandonment and suspension together as a fully suspended construction project can be said to be a failed or abandoned project (Adebisi et al. 2018).

Moreover, since there is no mentioned stipulated period of time when activities in the construction project site ceases to declare that such project has failed or abandoned, the Ministry of Housing and Local Government in Malaysia (MHLGM) stated that if activities on a construction site is suspended up to six months or more that such project can be said to have failed or abandoned. Hence, in Nigeria there is no clear and generally accepted conditions to term a project abandoned or failed. However, a construction project can be said to be abandoned/failed in Nigeria when the construction activities in the project site has fully be suspended after the project have begun for one reason or the other (Olalusi and Otunola 2012). In the context of this paper, project failure will be described as a situation where after a construction project has commenced, the construction activities suspends indefinitely without any prior notice of resumption over a long period of time (Adebisi et al. 2018).

The aim of this study is to critically analyse the environmental related factors that influences government building project failures in the Nigerian Construction Industry (NCI).

This study through its findings, will lead to recommendations aimed at reducing the factors which influences the failures of construction projects in the Nigerian construction industry and improvements in the project success rate which will further develop the dynamic business environment of the country.

# **1.1 Problem Definition**

Project management practises can be said to be at its infant stages in developing countries like Nigeria due to lack of project governance, shortage of skilled staffs, difficult economic and social conditions, weak political institutions and deep cultural and religious beliefs as emphasized by Abbasi et al. (2000). Odusani et al. (2003), Nwachukwu and Emoh (2011), and Kissi and Ansa (2013), noted that developing countries like Nigeria and Ghana has no regulatory bodies or institutional framework to assess, review and control current and future skill requirements for construction project management systems. Project management requires the application of skills which can be gained through training and experience such that when applied to project activities results the success of projects and its requirements (PMI 2008). However, Nwachukwu and Emoh (2011) pointed out role of project management in a project environment as it will create a cordial relationship among consultants, contractors and every other site operative.

The improper use of project management methodologies and uncertified project managers can be regarded also the major challenges which hinders the success of most projects in Nigeria. According to an observation made by Odusami et al. (2003), it was observed that most government projects fail because of uncertified project managers who learn their trades in the field and the lack of professional bodies to regulate the activities of project executions in the country. The use of substandard materials in construction sites can account for the collapse of buildings as identified by Windapo and Rotimi (2012). Windapo (2006) further noted that most of the materials supplied to construction sites do not meet required specifications. This can be attributed to poor project governance and lack of regulatory bodies to monitor the project activities and set standards for the suppliers to adhere to.

More so, the lack of project management knowledge, bribery and corruption, low level of professional training, lack of leadership commitment, rigid and organizational structure and change of authority are the major obstacles facing project failures in developing countries (Olateju et al., 2011). Furthermore, Nwachukwu and Emoh (2011) also evaluated the constraints facing the implementation of proper project management approaches in developing countries such as; undefined project mission, inadequate communication, lack of management support, poor management plan and support, lack of project scheduled plan, poor personnel selection, low technical know-how, poor monitoring and feedback system and poor conflict management. The above-mentioned limitations affect Nigeria as a developing country in terms of her economic, political and administrative systems.

# **1.2 Aim of Study**

Critical Analysis of Government Building Project Failures in Nigeria (Case study of the Nigerian construction Industry).

# **1.3 Research Objectives**

The objectives of this research are:

1. To discuss how government development building projects fails.
2. To identify the environmental related factors that influences the building projects failures in Nigeria.
3. To discuss the environmental factors that lead to government building project failures.

# **1.4 Research Questions**

* How can building construction projects be analysed to determine failures?
* What are the environmental factors that influence building project failures?
* What effects can the identified environmental related factors cause on government building projects?

# **2.0 Literature Review**

# **2.1 INTRODUCTION**

A review of relevant literature on building construction projects, an overview of the Nigerian Construction Industry, analysis based on building projects and factors affecting its failure in terms of environments, stakeholders, cost and time overruns, quality etc. The factors which influences building project failures are being discussed as failing to consider these factors before and during the execution of building construction projects leads to failure. The previous works done on this related topic is considered to access its scopes for further research.

# **2.2 Overview of Nigerian Construction Industry**

Although the NCI have outgrown other sectors in the Nigerian economy over the last decade, its contributions to the growth and development of the country is still very low in terms of employment of labour and GDP and this occurs as a result of significant number of challenges facing the industry which includes and not limited to environmental issues, political instability and poor leadership, bureaucracy, over politicization of industrial projects, poor technological infrastructure, unethical practises in the industry, power shortage, unavailability of materials, poor planning of development projects etc. (Dantata 2008).

However, considering the dynamic nature of the business environment in Nigeria, investors can be attracted by several opportunities which exist in the industry especially in education, development building projects, ICT, subcontracting sectors, commercial buildings etc. According to Dantata (2008), the industry have grown at an impressive rate of 21.1% in the year 2005 which accounted for more than double of the average growth of the overall Nigeria’s economy (5.6%) in same year. As the Nigerian emerging economy is being projected for growth by the Business Monitor International Group (2012), the construction industry will play a huge role in contributing to this growth and development of the country’s economy.

In recent years, the NCI have witnessed growth compared to other African countries. For instance, the industry’s total revenue in the year 2016 was $21.6bn which represented a compound annual growth rate (CAGR) of a percentage score of 9.7% between the year 2012 and 2016. Comparing this other African countries like South Africa and Egypt, whose construction industries grew a CAGR of 8.6% and 6.4% respectively during the same period of years which accounted for respective values of $12.0bn and $4.3bn in 2016 (BMIG 2012). Furthermore, the industry’s expected growth in the future can be driven by infrastructure investments, development construction projects, educational projects and other developments of public amenities which will support the construction activities in the future. This will further attract foreign investors and more business activities in the business environment if the significant challenges facing the industry is resolved.

For the continued growth of the country’s economy, the construction industry will play a vital role as almost every aspect of the economy is affected by its activities. The construction industry and its activities have been considered to be one of the major sources of economic growth, development and economic activities through ways like creating employment opportunities for skilled, unskilled and semi-skilled workforce (Khan 2008). The interrelation between the construction industry and other economic sectors in the country makes it an important sector for the growth and development of a country’s economy as stated by World Bank (1984).

Leah (2001) considered construction as an important driver in a country’s economic growth as it supplies the necessary infrastructures which are needed for the development of other sectors of the country’s economy. Considering the ability of the construction industry to drive other economic sectors, greater attention should be given to the industry as it will bring balance to other sectors of the economy thereby stimulating the growth process of the country’s economy (Saka and Lowe 2010). Odediran et al. (2012) in their study concluded that ‘construction is a vital sector of any economy because of both its size and the potential role it can play in the development efforts of that economy’.

# **2.3 Building Construction Project Failures**

Though various authors have researched and identified different factors affecting building construction project failures in Nigeria, this work will be based on the environmental related factors influencing the failures and abandonments of government development building projects in Nigeria. Elinwa and Uba (2011) identified time and cost overruns as the most important factors which causes construction project failures and abandonment in Nigeria. Political factors, inadequate planning, inadequate fund/financing, inflation, variation of project scope, bankruptcy of contractor, among other factors was identified by Ayodele and Alabi (2011) as some significant factors influencing the failures and abandonment of government building projects. Similarly, Alao and Jagboro (2017) pointed out fund mismanagement, inadequate budgetary allocation, inadequacy of finance, inflation and bankruptcy of contractors as the factors influencing government project abandonment and failures. Nonetheless, the inconsistency and instability in government, political corruption and defective methods of project finance in the award of government building contracts as identified by Ubani and Ononuju (2013) was considered to be the most important factors influencing the government building projects in Nigeria.

Furthermore, Nwachukwu and Emoh (2011), Olalusi and Otunola (2012), Zuofa and Ocheng (2014) and Amade et al. (2015) identified political interference and corruption as a major factor responsible for most government building project failures in Nigeria. These factors have undoubtedly contributed to the stagnant growth of the NCI which invariably affects the country’s economic activities. Also Ubani and Ononuju (2013) in their research indicated that the main salient factors affecting public sector building construction projects can be attributed to the unreliability mode of finance and payment of completed works, the frequent change in government and political power, and the use project contract sums to compensate the political big-wigs in the country. Findings showed that when there is a change of government, many development building construction projects which were ongoing by the previous government are abandoned and neglected by a new government without considering how important such project might contribute to the nation’s development. Without considering the amount of funds already invested in such mega building projects, they are being relocated to a preferred site by the new government thereby causing a termination of contract or sometimes abandonment (Ubani and Ononuju 2013). Sometimes, rather than executing and continuing the projects, the finance meant for the projects are being used to settle the political financiers of the new government. Ubani and Obinuju (2013) therefore concluded that politically induced corruption, unreliable mode of finance and non-compliance of the initial mode of payment after completed project works are the key factors affecting the rate of government building project failures in Nigeria.

More so, Anyanwu (2013) identified lack of proper planning and scheduling of building project activities by trained project managers as the significant factors responsible for the failure of government building projects. The ineffectiveness of project planning, poor monitoring and control of project progress, technical feasibility studies and poor management was also mentioned by Ubani and Obinuju (2013) as other factors influencing failure of building construction projects in the public sector. Hitherto, the failure and abandonment of public sector building projects in Nigeria have resulted to the waste of scarce resources, environmental degradation, and high rate of unemployment, aggravated deterioration, home displacements and settlements, building destruction etc. (Elinwa and Joshua 2011).

Nigeria as a developing country have been unable to develop and compete with other developing countries of the world due to incompetence and inexperienced indigenous contractors in the nation. This has however made the building construction industry to be unable to compete with the levels of developing nations compared to Asian countries like Malaysia who are far more ahead of Nigeria in terms of infrastructure development over the years (Ogbegbor 2002). Based on previous researches, the indigenous building construction contractors who are sometimes allocated the government building projects are challenged with low staff strengths and equipment capacity, low annual turnover, ambiguous areas of specializations, poor project funding arrangement etc. as these factors hampers the progress and development of the NCI (Kehinde and Mosaku 2006). Results showed that most of the building construction firms are medium sized organization in terms of staff strengths, equipment capacity, low annual turnover who are unable to handle the complexity and complication in building construction leading to failures and abandonment of government building construction projects (Ogbegbor 2002).

Development government building construction projects failures have been a major issue of concerns in developing countries which contributes to the stagnant growth of such nations as the frequent occurrence slows down the growth of a nation’s economic development. Folagbade (2001) and Badejo (2009) have traced the causes of government building construction projects failure to lack of proper supervision, faulty construction, bad design, use of low quality materials, hasty construction, foundation failure, ineffective enforcement of building codes by the relevant town planning authority, lack of proper maintenance etc. Folagbade (2001) in his research identified twenty five (25) reported cases of building failures in Nigeria between 1980 and 1999 of which 12% out of these cases was government development buildings.

According to Pratt (2000) in his research of the causes of government building construction failures in developing countries using Malaysia as an example discovered that in the last decade in the Malaysian construction building projects especially the magnificent monuments were found to be not cost and function effective. He moreover discovered that then estimated budgets for such projects were exceeded, the completion dates were not reached, and the project quality did not satisfy its expectations thus leading to failure. Furthermore, Abdullah (1985) in his study of the Malaysia construction industries identified factors like wastage of building construction materials as also a major concern for government project failures and this happens as a result of poor workmanship, setting out error, orders not meeting required specifications, excessive using of materials, improper storage, breakage in handling, building materials not reaching requirements and misdemeanour.

More so, the Construction Industry Development Board in Malaysia (CIDB) in its masterplan highlighted the challenges facing the construction industry such as economic volatility, delays of construction building execution, shortage of manpower, cost overruns, lack of data and information, low quality, low productivity and poor image in the industry. The above mentioned problems can as well be attributed to similar cases in Nigeria. The main causes of these problems can be attributed to low usage of technology, project environments prone to accidents, poor projects and site management, unskilled labour, high volumes of construction materials wastage, poor maintenance culture in the industry, high input cost and duration estimation, and non-conducive project environment (Nwachukwu 2013).

Most government development building construction projects are termed mega projects which involves huge contract sums, lots of participants, aiming at having a significant impact on the social and economic development of the nation, and also have connection to other major developments according to the Development Bureau (DB) in Hong Kong. Following the above definition by DB (2002), such projects involves different stakeholders from various backgrounds who will in one way or the other interested in the project. The improper handling and poor communication between the stakeholders involved in building construction projects leads to project failures as these parties as seen by many researchers possess relating factors which can cause cost and time overruns in building construction government projects not leaving other factors like materials, labour and other external factors (Assaf & Al-hejji, 2006; Olawale & Sun, 2010; Sweis et al, 2008; Al-Momami, 2000; Kaming et al, 2000; Sambasivan & Soon, 2007). Managing stakeholders in mega government building construction projects have been identified as a complicated task due to the complexity and complications involved in executing such projects (Olander and Landin 2005). Often times, the identification of stakeholders needs, proper assessment of their impacts and relationships and deriving an appropriate strategy for their engagements poses a huge challenge in the development building construction projects (Yang et al. 2011b).

Yeo (1995) pointed out that due to the huge size and complexity of mega projects, e.g. government building construction projects like Hospitals, local government offices, education buildings, state secretariats etc. there will always tend to be challenges in managing such projects. He identified three challenges as;

1. The involvement of numerous stakeholders leading to stakeholder interrelationships and conflicting interests.
2. The dynamics and growing capacity leading to uncertainty in project execution.
3. Poor project governance in the administrative structure which leads to high public attention and controversies.

According to Iyer and Jha (2006), indecisiveness, conflict and inadequate coordination of project stakeholders could significantly hinder the progress of a scheduled mega construction project leading to failure. Considering the numerous number of stakeholders involved in the execution of mega government construction projects, conflicts are bound to arise due to diverse interests, expectations and perceptions of the different stakeholders participating in the development of the government project (Li et al. 2012). Li et al. (2012) further described stakeholders concerns as multidimensional in such a way that for the government, its concern for building construction projects are to improve international reputation and economic development of its nation, while the community focuses on maintaining construction sustainability, the pressure groups are concerned with maintenance and sustainance of ecological and environmental factors and some project affected groups focuses on tangible compensation from the government. In the quest to prioritize these different concerns of the major stakeholders involved in the government building construction projects and satisfy their individual vested interests, the decision making for the project execution is being conflicted by trying to match the different objectives of the stakeholders thereby leading to the project failure and abandonment.

Doom et al. (2013) stated that interests and actions of stakeholders during the different stages of construction project execution can be influenced by factors such as the political system and regulations of the nation, media effects, local culture etc. The inability to properly address these factors during the different stages of the project execution can lead to incomplete stakeholder boundaries and unexpected negative effects on the construction project thereby leading to construction project failure. Various stakeholders involved in the government construction building project have different ways of influencing and impacting on the project failure as some stakeholders have more power and influence in a project than others. According to Achterkamp and Vos (2008), the classification of stakeholders will lead to proper identification and will be useful in distinguishing the stakeholders in the appropriate categories according to their power ranking as getting this wrong can bring chaos during project execution. For instance, the Nigerian government awarded a building construction project to construct a federal ministry of science and technology complex in the six geopolitical zones in the country to improve its technology development in the country, these development construction building projects failed in some zones while the managed constructed ones never reached its requirements based on cost, time and quality. This was as result of stakeholders influence which resulted from political instability as the change of power in government happened during the execution of these projects as there was a miscommunication between the major stakeholders of these projects in terms low-speed indecision making, design change, poor site management and supervision, variations in architect’s drawings etc. as identified by Ubani and Obianuju (2013).

According to a survey done by Chan and Kumaraswamy (1997) in Honk Kong construction industry as the factors causing time overrun in building construction project as indicated by the major stakeholders in the building construction industry was identified as delays in decision making, unforeseen ground conditions, poor site management and supervision, design change and client initiated variations. Therefore the inadequate contributions of the major stakeholders in a project to make the right decisions at the appointed time, control and monitor project progress, taking effective decisions during design change and variations and using the appropriate project management tools during building construction activities might lead to building construction project failure. Frimpong et al. (2003) in their study from Ghana construction industry found out the various factors causing time overrun in building construction projects in Ghana was impacted by the major stakeholders involved in the projects. The identified factors are monthly payments difficulties for the government agencies which can as well be called the clients, poor contractor management, poor technical performance, material procurement, and escalation of building construction material cost.

# **2.4 Environmental Issues**

Every construction project occurs in an environment thus the failures of building construction projects can be influenced by environmental variables. Youker (1992) after his review of hundreds of World Bank construction projects indicated that project failures often depends on factors in the projects general environment. This review points out that while a project is to be undergone, a proper understanding of the environmental related factors which can affect the project failure is essential. Sanvido et al. (1992) also stated that due the complexities in construction projects, the environment remains exceptionally uncertain as the environmental conditions can change at any point in time. According to Arman et al. (2009), the sources of the factors which influences building construction projects in its environment can be both internal and external factors.

The planned progress and development of a construction project can be interfered by some environmental factors therefore, the failure of the construction industries to understand the environment in which the construction projects takes place and develop a developmental strategy to handle the environmental issues when they surface directly affects the success of the construction project (Bernett 1991; Youker 1992; Kuye 2004; Muir 2005). Evidential environmental issues such as political, economic, social-cultural, technology, legal, and environmental conditions have been reported as issues causing delays and poor performance of development construction projects (Ogwuleke 2011). Political issues on the environment which can influence project failures may include the following; terrorism, political instability, war, changes in government regulations, laws and policies, bribery and corruptions, restrictions, expropriation, confiscation, change of government etc. Economic issues include; taxation change, inflation or change in input prices, material scarcity, cash flow problems, interest rates, changes in regulations, difficulty in accessing credit facilities, changes in market conditions, etc. Socio-cultural issues might affect the project environment as result of unemployment and education level, demonstrations and strike actions, human right activism levels, the independence of mass media and its proliferations, social vices and crimes, work attitudes, respect for leaders, lifestyles, values, superstitions etc. moreover, technological issues may include lack of technical know-how, obsolete technology and tools, use of old technologies, inefficient information dissemination etc. Legal environmental sources include Unrealistic contract time frames, litigation, environment regulation procedures, licencing and permit regulations, contract disputes, arbitration etc. The environmental sources include the act of God, earthquakes, ground conditions, weather patterns, dust and lightening at the construction sites, noise, seasonal changes, topography etc. (Ogwuleke 2011).

Bennett (1991) in a major review of project management theory established that planned progress of construction projects is been interfered by most environmental factors. He further explained that due to the unpredictable nature of the construction environment, its potential effects are greater. Therefore, not considering of this potential effect through scanning of the environment were the construction takes place makes it difficult to manage the activities of building construction projects. Developing countries are faced with special challenges from the construction environment which however leads to the issues of cost and time overruns even before the execution of construction projects. Inherent risks such political instability, excessive bureaucratic contract procedures, lack of adequate infrastructure e.g. transportation networks, electricity supply and telecommunication systems arise due to these environmental challenges (Akanni et al. 2015). Ajayi et al. (2010), identified and grouped the most important external environmental factors in decreasing order as community issues, weather conditions, government policy and economic meltdown.

In Nigeria, the different geo-political zones in the country possess different environmental variables which affects the building construction projects performances in the different states of the zones (Akanni et al. 2015). Failure to understand the different features and factors within the construction project environment which can influence the project performance leads to project failure and abandonment (Youker 1992).

As stated by Ode and Battaineh (2002), in a fluctuating economic environment, the need for a building project to be financially viable is important as this has turned out to be a challenging tasks in building project executions. Also considering the periodic economics cycles of most developing countries, the construction industries activities are significantly affected as the forecasting of economic trends are difficult (Oladapo and Olotuah 2007). As most building projects are financially limited, Obalola (2006) in his study made it clear that financial forces within the building project environment are different from the economic forces basing his facts that economic forces within the building project environment has to do with resources deployment as financial forces has to do with money. Cost overrun in government building constructions is no exception one of the factors influencing project failures according to researchers. This has been as a result of using the same old conventional cost management system which was invented in the year 1920 by most construction companies especially in developing countries (Johnson and Kaplan 1993). As noted by Ostrenga et al. (1998), this obsolete cost system have failed to provide the precise building materials product cost estimate. As stated by Ashworth (2010), Oyedele (2015), and Samphaogeon (2010), the high rate of inadequate estimation of building construction product costs in the early stages of a construction project influences the issues of cost overruns in government building projects leading to abandonment and failure of projects. Overall, some of the major factors influencing these cost overruns in building construction projects can be as a result of market conditions, building construction project complexity, difference in design information, lack of experience of a project manager and historical data Asworth (2010).

Oyedele (2015) in his study identified various factors affecting the issues of cost overrun in the building product cost estimation in the Nigerian construction industry which invariably affects government building construction projects. To mention a few, most of the building construction materials estimates are accurate during stable political times and vice versa as the political situation of the country affects prices of building materials. Secondly, some government policies such as taxes, importation policies, procurement methods, local content investment policies and number of foreign contractor affects building materials cost estimates at any point in time without prior notice. Nonetheless, the economic condition of the country at a point in time affects construction costs. E.g. Inflation, exchange rate of foreign currency, monetary rate and lending interest rate. Social vices such as the Boko-Haram insurgency and the Niger-Delta militant groups poses a huge effect in the estimation accuracy of building material costs in Nigeria. The building construction site location affects the cost estimates in terms of the geographical locations of the project. For instance the topography and soil conditions in the northern part of Nigeria and swampy areas of the Niger-Delta regions. Also the seasonal changes of the country affects the cost estimates of materials as an estimate done during the dry season might change as the rainy season takes place.

As the general election year approaches near there is always a lot of government awarded contracts and procurement activities which affects the cost estimates of building materials. Finally, the issue of corruption have been of a great concern as the estimated costs of building construction materials are been inflated which therefore causes kickbacks in procurement activities. According to Oyedele (2015), if these factors are not addressed and handled properly during building construction execution, failure is therefore imminent. For instance the government building construction project of the National Library headquarters Abuja, Nigeria. This government building construction project was awarded in the year 2006 at the total cost of 8 billion Nigerian Naira and was abandoned 7 years later into its execution according to Peter (2018). Today this project has been reviewed and an increased sum of 50 million Nigerian naira is needed to complete this project if it is to be completed.

As stated by Malam Adamu Adamu the Minister of education of the country on the 7th edition of weekend ministerial press conference briefing cited that as a result of poor funding of the mega project into its execution lead to the abandonment and failure of this project as reported by the Nigerian Tribune newspaper. Moreover, there was also a design change in this project as its initial planned design was meant to be eight floors which was later scaled down to five floors as the Bureau of Public Procurement and the Federal Executive Council (FEC) issued a compliance Certificate to the contractor (Reynolds Construction Company Nigerian Limited) in approval of this design change in the year 2010. As time went by, the project was delayed and the time for its completion passed, cost increased etc. a directive from the then president of the country instructed that the contractor should revert to the original design of eight floor (Peter 2018). The contractor requested for a contract review for an updated cost and time extension which further led to cost and time overrun of this building project. This issues of time and cost overrun in this project can be attributed to the political environmental related factors such as political instability, change of government etc. which further leads to economic related issues as price fluctuation, market conditions and competitions, economic growth rate were affected. It was also observed that contract disputes, litigation, arbitration, unrealistic contract time frames as legal related environmental issues also affected the failure of this project. Figures 1 and 2 below are images from the construction site as reported by Adepoju a Channels TV respondent on July 2, 2018.

***Fig. 1****. Failed and abandoned Nigeria National Library building project.*



***Source****: Channels TV (Reported by Adepoju 2018).*

***Fig. 2****. Failed and abandoned Nigeria National Library building project*



***Source****: Channels TV (Reported by Adepoju 2018).*

***Fig. 3****. Contract agreement of the failed National building project in Nigeria*



***Source****: Channels TV (Reported by Adepoju 2018).*

Most developing countries like Nigeria are faced with the challenge of lack of technological know-how as this has resulted to the inappropriate use of construction technology which directly affects the development of government building projects (Akanni et al. 2015). In developing strategic plans in the building construction environment, technological aspects should be considered as a very important factor as using the inappropriate construction technology hinders the progress of a building construction projects as stated by Oladapo and Olotuah (2007). As Nigeria remains to be a net importer of technical manpower, the construction industry suffers as they rely on developed countries for construction technology and resources. Aniekwu (1995), perceived that non consideration of the technological factors in the strategic plans of the building construction projects in developing countries leads to failures in building projects.

Government policies and decisions on the construction industry affects the building projects in the country as this result to the increment or decrement in the demand for construction services through monetary policies and budgetary measures. Nevertheless, the regulators of the national economy, the regulators of the construction environment e.g. laws of guide ethics and construction practises, clients etc. are the major players in the political environmental issues of a building construction projects failures (Akanni et al. 2015). Mansfield et al. (1994) observed that the issue of political instability in a government such as the change of government can stop ongoing construction projects by its predecessors based on political, social and environmental grounds to invoke their powers. As believed by Thomas and Martin (2004), Political instability, national disunity and poor leadership thus retards national developments in a nation. Political issues affect building construction activities as this can produce an unstable environment as result of unstable government, unpredictable shifts in the country’s economy and unexpected changes in design of building projects e.g. National Library Headquarters, Abuja, Nigeria. According to Jabnoun and Sedrani (2005), the political factors influence the environmental variables which affect the progress of a building construction project in its environment. E.g. safety, community perception and legal acceptability. They further explained that these effects are mostly high on the building construction projects as wars, riots, civil unrests, religious turmoil, strikes, discriminatory legislative actions etc. can lead to building construction failures.

Due to encountering laws and regulations in the legal environment which also influences the construction industry, building constructions projects are affected by these regulations (Akanni et al. 2015). E.g. planning and environmental regulations, safety regulations, codes of practise, insurance and taxation laws, licensing etc. As observed by Thomas and Martin (2004), the change of these laws and regulations during the life cycle of a building construction project can cause the failure and abandonment of such project as problems may arise. Building contract relationships are been affected by legislation as this directly impacts the activities of clients. Bearing in mind that the legislation in Nigeria is based on the British model as the Standard form of Building Contract issued by Joint Contract Tribunal (JTC) was modified to be used in Nigeria, this responsibility is important for stakeholders in the construction industry needs to get used to the regulations and laws governing the legal environment because failure to note this affects building project performance (Oladapo and Olotuah 2007).

Customs, lifestyles and values of a society in which a building construction project takes place shows the characteristics of the society’s environment which can have impact in the construction project development (William 2002). The management of building construction projects in communities differs from one society to the other. Socio-cultural factors like languages, norms, values, method of communication among the project workforce can influence the progress of the project. E.g. the oral communication between the illiterate workforces in some regions in Nigeria can be best understood by using the Pidgin English as identified by Engobo (2009) in his study in the Niger-Delta region of Nigeria. The use of inappropriate leadership style in handling these socio-cultural factors within the building construction projects will result to time and cost overrun of such projects.

# **2.5 Summary**

From the reviewed literature it can be seen that several factors influencing the failure of development government building projects can be factored to environmental related issues, stakeholders engagement, political instability, economic related issues such as market conditions, inflation, price fluctuations of building materials, legal issues such as environmental laws and regulation guiding the building construction environment, technological related issues such as lack of technical know-how, use of obsolete technology equipment, social vices such as language barriers, insecurity, insurgence, and environmental related factors such as fluctuations in weather conditions, topography, ground conditions among many other issues in the building construction environment.

# **3.0 Research Methodology**

# **3.1 Introduction**

For the purpose of this work, the research approach to be used is aimed at summarizing the information collected to satisfy the main objective of this study which is to critically analyse the environmental related factors which influences the failure of development government building projects in Nigeria. According to Collis and Hussey (2009) and Smith and Albuam (2006), they defined research as an investigation which involves a systematic and methodical process with its intention being to discover and addition of value to the knowledge in the related subject. As shown in figure 4 below, Saunders et al. developed the research onion as an initial guidance for business students to direct them on which methods and approaches to be used in their research study as it was initially used by the authors to develop their research philosophy.

***Fig 4****. The research onion*



 ***Source****: Saunders et al. (2003)*

# **3.2 Research Philosophy**

Ontology and epistemology are known to be the two major philosophical ways used to distinguish the existing research paradigms as they relate the nature of known knowledge and its further development of the known knowledge (Saunders et al. 2009; Kalof et al. 2008; Laughin 1995). While ontology is the view of one’s perception of reality, epistemology on the other hand can be viewed as a way to generate, understand and the use of the existing knowledge as perceived to be valid and accepted (Neuman 2011).

As every research intentions are to meet its purposes by achieving its aims and objectives, the philosophical dimensions are therefore important as it enables the research to achieve its set aims and objectives (Soini and Kronqvist 2011; O’Reilly and Kiyimba 2015; Saunders et al. 2012). Pragmatism, positivism, interprevitism and realism are the four views in research process as opined by Cresswell (2003). Saunders et al. (2003) however argued that pragmatism, positivism, and interprevitism are the only three that have dominated academic literature. According to Easterby-Smith et al. (2002), Saunders et al. (2000), Hussey and Hussey (1997), positivism and interprevitism are the two wide adopted contrasting views, pragmatism is a combination of the two.

According to Tashakkori and Teddlie (1998), pragmatism as a branch of research refuses to acknowledge the conflict between positivist and interpretivist research philosophies. This method starts off with a research question which determines the research framework of the study instead of questioning ontology and epistemology at the beginning of the study as its emphasis is believed that research philosophy should be viewed as a continuum rather than option which opposes previous knowledge. Emphasis on this research method is based on what works best to address the research problem at hand. To better understand reality, it is therefore socially constructed (Wahyuni and Dina 2012).

Having in mind this study’s intentions is to critically analyse the environmental related factors which influences the failure of government building projects which is seen as a continuous issue in Nigeria, this research will adopt the interprevitism view because it suggests that reality is subjective and generalisability is not crucial as qualitative method of data collection justifies this philosophy. With the intentions of avoiding biases and improving on reliability, accuracy and validity, the adopted research philosophy will therefore give a holistic research from a subjective point of view (Baker 2003).

**Table 1: Fundamental Beliefs of Research Paradigms**

|  |  |
| --- | --- |
|  | **Research Paradigms** |
| **Fundamental Beliefs** | *Positivism (Naïve realism)* | *Realism (Postpositivism)* | *Interpretivism (Constructivism)* | *Pragmatism* |
| *Ontology: the* | External, | Objective. Exist | Socially | External, |
| *position on the* | objective and | independently of | constructed, | multiple, view |
| *nature of reality* | independent of | human thoughts and | subjective, may | chosen to best |
|  | social actors | beliefs or knowledge | change, multiple | achieve an |
|  |  | of their existence, but |  | answer to the |
|  |  | is interpreted through |  | research question |
|  |  | social conditioning |  |  |
|  |  | (critical realist) |  |  |
| *Epistemology:* | Only | Only observable | Subjective | Either or both |
| *the view on what* | observable | phenomena can | meanings and | observable |
| *constitutes* | phenomena can | provide credible | social | phenomena and |
| *acceptable* | provide credible | data, facts. | phenomena. | subjective |
| *knowledge* | data, facts. | Focus on explaining | Focus upon the | meanings can |
|  | Focus on | within a context or | details of | provide |
|  | causality and | contexts | situation, the | acceptable |
|  | law-like |  | reality behind | knowledge |
|  | generalisations, |  | these details, | dependent upon |
|  | reducing |  | subjective | the research |
|  | phenomena to |  | meanings and | question. Focus |
|  | simplest |  | motivating | on practical |
|  | elements |  | actions | applied research, |
|  |  |  |  | integrating |
|  |  |  |  | different |
|  |  |  |  | perspectives to |
|  |  |  |  | help interpret the |
|  |  |  |  | data |
| *Axiology: the* | Value-free and | Value-laden and etic | Value-bond and | Value-bond and |
| *role of values in* | etic |  | emic | etic-emic |
| *research and the* |  | Research is value |  |  |
| *researcher’s* | Research is | laden; the researcher | Research is | Values play a |
| *stance* | undertaken in a | is biased by world | value bond, the | large role in |
|  | value-free way, | views, cultural | researcher is | interpreting the |
|  | the researcher is | experiences and | part of what is | results, the |
|  | independent of | upbringing | being | researcher |
|  | the data and |  | researched, | adopting both |
|  | maintains an |  | cannot be | objective and |
|  | objective stance |  | separated and so | subjective points |
|  |  |  | will be | of view |
|  |  |  | subjective |  |
| *Research* | Quantitative | Quantitative or | Qualitative | Quantitative and |
| *Methodology:* |  | qualitative |  | qualitative |
| *the model* |  |  |  | (mixed or multi- |
| *behind the* |  |  |  | method design) |
| *research* |  |  |  |  |
| *process* |  |  |  |  |

***Source****: Wahyuni and Dina 2012 (Adapted from**Saunders et al. (2009, p.119),Guba and Lincoln (2005), and Hallebone and Priest (2009).*

# **3.3 Research Design and Method**

To develop a research design, the research question and research purpose is considered at the beginning as they will provide the important and necessary information needed to assess the research aim (Saunders et al. 2009; Berry and Otley 2004; Yin 2012). Research design as viewed by Ghauri and Gronhaug (2002) is the overall strategy selected to obtain the necessary clues needed to provide solution to research questions and problem statement of a research study. A research design suggested by Briggs (2011) is shown in the figure below;

***Fig 5. Research Design***

***Source:*** *Briggs 2011 (Adapted from Nwabueze 2011).*

Three types of studies as described by Saunders (2008) are; Explanatory, descriptive and exploratory. Studies which establishes casual relationships between variables and explains these relationships can be defined as explanatory studies. Descriptive studies defines an accurate picture of an event, person, or situation which must be done prior to the undertaken data collection. This study does not critically review and evaluate data rather it only uses descriptive measures. Exploratory study on its own focuses mainly on a particular subject matter such as problem or observation to allow for deeper understanding and clarification around a problem where there is an existence of previous research on the focused problem. It can be conducted through literature review, interviews with experts on the research areas or focus groups (Saunders 2008). The requirements of this research to fulfil the aim therefore resonates on exploratory study, as previous researches have been conducted on this area of focus based on theoretical underpinnings. The intent of this research is not to “establish casual relationships between variables” rather to describe an already known issues, therefore the exploratory study is adopted for this research study.

According to Saunders et al. (2012), the different types of research methods are the qualitative, quantitative and mixed approaches. More so, Green (2008) affirmed that qualitative and quantitative approaches are the two basic methods of data collection and analysis. However, combining both methods can be said to be the mixed approach as said by Saunders et al. (2012). In order to obtain a more comprehensive understanding of these research practices, it can be ideal for a case study research to adopt the mixed approach to enable comparisons between the observed practises by the studied subjects (Wahyuni and Dina 2012). The mixed approach method also clarifies issues by providing stronger evidence and refining new ways of providing solutions to research questions (Johnson and Onwuegbuzie 2004). This research will adopt the qualitative approach method as it is found suitable for achieving the overall aim of this research as it seeks to explain phenomenon using description of real life situations and also seek to understand (Pickard 2013). This is one of the major characteristics of this method as it seeks to understand the environmental factors impact on government building project failures in Nigeria. The quantitative approach which provides answers to relationships between variables with regards to cause and effect will not be suitable for this research hence the qualitative method is adapted. The table below shows the comparisons between the two basic research methods.

***Table 2: Comparism between Quantitative and Qualitative Methods***

|  |  |  |
| --- | --- | --- |
| **Parameters** | **Quantitative research**  | **Qualitative research**  |
| **Underpinning philosophy**  | Rationalism | Empiricism |
| **Data collection method**  | Structured/Rigid/Predetermined methodology  | Unstructured/Flexible/Open methodology  |
| **Purpose**  | Result oriented. To quantify the extent of variation in a phenomenon, issue etc.  | Explorative orientation. To describe the variation in a phenomenon, issue etc.  |
| **Size**  | Emphasis on greater sample size. It is less bias. | Fewer samples. It is more bias |
| **Collection pattern**  | Meaning derived from number with high level of reliability. Straight forward data collection before analysis. | Meaning expressed in words with high degree of validity. Data collection and analysis are in parallel  |
| **Basic research objective**  | Explains phenomenon based on numerical research. Testing and verification. Objective - distanced from or independent  | Explains phenomenon using description of real life. Seeks to understand. Subjective – has an influence on the research result and influenced more by personal opinion  |
| **Research**  | Relies on deductive reasoning – where theories or hypotheses are developed and tested through empirical observation. | Relies on inductive reasoning - the researcher develops hypotheses and theories with a view to explaining empirical observations of the real world because of potential bias |
| **Duration** | Difficult to design but data analysis is straight-forward. Less time consuming. | Easier to design but data analysis is often tasking. Time is need to research through models, principles and theories.  |
| **Nature of data analysis**  | Analysis conducted through the use of diagrams and statistics  | Analysis conducted through the use of conceptualisation  |

***Source:*** *Abayomi 2013* ***(****Adapted from Collis and Hussey 2009; Saunders, Lewis and Thornhill 2009; Saunders et al 2007; Kumar 2005; Hair et al 2003; Creswell 2003; Ghauri & Gronhaug 2002)*

# **3.4 Scope of Study**

This study will cover the period of 2006 to 2018 with the aim of considering the recent failed government building projects over a decade during two different political regimes within this period till date in the Nigerian government. This period of time was chosen by the researcher to explore two different government ruling parties in the country to ascertain the identified problems such as change of government, political instability, bureaucracy etc. as related to the research topic.

Some major government building projects according to their size and economical value to the Nigerian government will be selected as the failure of these projects among others have affected the economic growth of the nation and stagnant growth of the Nigerian construction industry.

# **3.5 Data Collection Technique**

According to Saunders et al. (2012), the two basic sources of data collection are the primary and secondary ways. Hence, primary and secondary data will be collected. Primary data will be the original data collected for the purpose of this research goal which properly suits the research problem while the secondary data is the original data previously collected from an existing social knowledge which will be reused to support this research goal (Hox and Boeije 2005). Lancaster (2005) suggests that researchers often need to combine these two sources to explore a certain phenomenon or in order to solve a problem.

# **3.5.1 Primary Data**

Primary data for an exploratory research study often requires the collection of either quantitative or qualitative data, or both (Lancaster, 2005). In this research, qualitative methods are used in preference to quantitative techniques. Qualitative methods are applicable in situations where the phenomenon is difficult to quantify (Lancaster, 2005). Unlike the quantitative technique that relies on statistical results, the qualitative technique seeks the collection of data in the form of ideas and opinions of people. The qualitative approach exchanges numbers with subjects, themes and categories that help explore and describe the issue rather than testing an existing theory (Brewer, 2007). Qualitative methods provide a wide range of data to be gathered and permit for a better understanding of the current situation of the Nigerian construction industry. Because secondary data sometimes may not give a clear picture of a recent or current happenings in a specific area of research, current data will therefore be obtained through the collection of primary data (Vartanian 2010).

# **3.5.2 Secondary Data**

To ascertain and validate the research findings of this study, secondary will be used (Saunders et al. 2012; Thorne 1994). This data will be collected by the researcher through library materials, journals, internet, bulletins, newspapers and scholarly articles. Research findings from the above articles will however influence the questions asked to the participants during the interview sessions for the cross validation of data collections. Secondary data collected for this research from appropriate and trustworthy materials will be considered as a useful source of information and are collected to add some value to this research.

# **3.6 Interviews**

Interviews may be classified into three types: structured interviews; semi-structured interviews; and unstructured (also known as in-depth interviews) (Saunders et. al. 2007). While structured interviews are usually used to obtain quantifiable data using questionnaires and identical set of questions, semi-structured and unstructured interviews are often referred to as qualitative research interviews (King 2004, cited in Saunders et. al. 2007). Both semi-structured and unstructured qualitative interviews are considered as very useful to undertaking exploratory research.

In this research, it was decided that semi-structured interviews would be conducted. Unlike unstructured interviews that do not require a list of questions to be answered, semi-structured interviews often involve a list of themes and questions to be covered in which the order and the number of questions can be changed depending on the conversation (Saunders et. al. 2007).

Semi-structured interviews are used in this research to allow the researcher to ask each interviewee the same set of questions, ask different questions if they arise during the interview and ignore the questions that have already been addressed. Although the questions asked are particular to the information needed to be answered, the form of questions is open-ended. An interview guide was used to indicate the questions that need to be asked and their sequence, as shown in appendix (1).

The qualitative technique used in this research relies on data collected from personal and telephone interviews with people working with the Nigerian construction industry. Kvale (1996, p. 70) considers qualitative interviews as a uniquely sensitive and powerful method for capturing the experiences and meaning of the subject’s everyday world.

The views of individuals who are involved in government building construction projects in the construction industry allow for a deep investigation into the area from a building construction perspective and provide a more reliable source of information to explore this phenomenon. The use of personal and telephone interviews is crucial for this research as they permit better communication with persons who are closeby and can be reached via mobile calling and are involved in most of the government building construction projects. Interviews involve a face-to-face meeting in which the researcher asks a series of questions to interviewees to elucidate the information gathered from the literature and from secondary sources. A properly organized telephone interview data collection process approaches a high level of unbiased standardization which is the major goal of every good research method (Lavracas 1989).

# **3.7 INTERVIEWEES SELECTION**

There is no general agreement between authors on the ideal number of interviews that are needed for better results. Kvale (2007) believes that a researcher should interview as many people as necessary to find out what he or she needs to know. Nevertheless, he also argues that if too many people are interviewed, this will lead to misinterpretations of ideas. In this research, it was decided that six interviews needed to be conducted with people from the Nigerian construction industry. One of the main reasons for choosing those interviewees was to allow for a variety of ideas from individuals who are working in the Nigerian construction industry and have experience in a government building project. This approach allows the researcher to gain a much better understanding of different aspects and to cover the research topics. This, however, does not mean that there are a different set of questions to be asked. Interviewees were invited and called to express their ideas on the different environmental related factors. Specific questions that may not be related to one interviewee were better explained by another who more understands that factor. One of the respondents was forced to withdraw resulting in only five interviews taking place. Sufficient information was still obtained from those five interviews and so no additional participants were sought.

Prior to the start of the interviews, the background information about the research project were given to all the participants, a briefing of the purpose of the interviews, and an indication of how the material will be used. The issues of confidentiality and anonymity were also addressed to ensure respondents comfort with the process and limit their concerns (Gilham 2000). Both the face to face and telephone interviews were semi-structured and took around 40 to 50 minutes to complete. The various respondents were open and honest and expressed interest in the research project. Interviews were recorded using a digital voice recorder so that they were saved and referred to later when analysed. However, a written record was used by way of detailed note taking in one of the cases due to the uncomfortable and uncertain gesture from the respondent in the use of digital voice recorder. The interviews commenced by asking broad questions, this allowed the interviews to start in a more flexible form, and thus allowed for much general information to be gathered. Following the general questions, further focused questions were asked in sequence as shown in the interview guide in appendix (1). In order to establish a clearer understanding of the topic and to get much more accurate results, answers from the interviews were transcribed by the researcher himself.

# **3.8 Research Sampling Technique**

The sampling technique for every research study can either be probability or non-probability sampling. While probability sampling is known to be associated with quantitative research because of its survey based research strategies where inferences are made from a sample of a population to meet research objectives, non-probability sampling is associated with qualitative research method where alternative techniques are used to select samples based on a subjective judgement to meet research objectives (Saunders et al. 2012; Creswell and Poth 2017).

According to Al-Busaidi (2008), the sample size for a qualitative research is not determinant on a fixed rule rather by factors such as depth and duration of interview and what is feasible by a single interviewer. Unlike the quantitative research sample size which is collected on large scale, qualitative researchers are sometimes limited to time and resource to tread breadth for depth (Britten 1995). Similarly, Patton (2002) stated that “given the time and resources available, qualitative research sample size depends on the aim of the research and what is possible as there are no rules involved in sample size”. Considering the limited time and resources for this research, five participants will be interviewed who have actively undertaken five to ten government building projects and is working with the NCI within this period of time till date. Using the criterion sampling method, interviewee profiles were limited to ensure that respondents were project managers, contractors and subcontractors (Black 2005). Bearing this in mind, below are the approached participants of the semi-structured interview.

# **Table 3. Semi-structured interview participants**

|  |  |  |
| --- | --- | --- |
| **Participants #**  | **Role**  | **Experience**  |
| Participant A | Project Manager | 5-10years |
| Participant B | Project Manager | Above 10years |
| Participant C | Contractor | 5-10years |
| Participant D | Contractor | Above 10years |
| Participant E | Sub-contractor | 5-10years |

***Source****: Author generated.*

For the purpose of this research study, the non-probability sampling technique will be used due to its subjective nature which is in line with the research study. Considering the time constraint, resources and workforce for this study, the purposive non-probability sampling technique will be applied from other types of this technique because the researcher decides what to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience gained and also helps in identification and selection of the information rich cases for the most proper utilization of available resources (Etikan et al. 2016). Also, due to its ability to accommodate a definite respondent and the peculiarity of the informative nature of this approach, it is therefore best suit the sampling technique for this study (Creswell and Poth 2017; Saunders et al. 2012).

# **3.9 Case Study Analysis**

Yin (1994) argued that the analysis of data gathered during the case study approach is not an easy task. Hence it is imperative to determine a method for data analysis. In order to deduce findings about the Nigerian Construction Industry environment, primary and secondary data collected for the case study were analysed using PESTLE analysis. The PESTLE is considered as a reliable analytic tool and was used in this research to analyse the industry’s general environment.

The use of this analytic tool allows the researcher to build up a better understanding of the Nigerian Construction Industry environment. It was used to evaluate data gathered from primary and secondary sources. The overall findings from this research helps the researcher to explore the environmental related factors influencing the failure of construction building projects and to draw up a conceptual model that can help the industry realise and understand the building construction environment. Therefore, the use of PESTLE analysis helps the researcher to make an in depth investigation into the area of study in order to evaluate these factors in case of the NIC, thus to answer the research question.

Although the SWOT analysis and other analytic tools can be used to also analyse case studies, they were not chosen for this research as this study focused its research limits to only the environmental related factors to focus on a particular area of research and the PESTEL was found best suit for it.

# **3.10 Ethical Considerations**

Ethical problems in research practises can be related to both subject matter of the research as well as its research methods and procedures (Burns 2000). As suggested by Saunders et al. (2003), key ethical issues to be considered in the design phase of every research study may include; voluntary participation of respondents and not enforced, respondents privacy, data protection act, researcher’s behaviour and objectivity, true results and not misinterpreted results, no form of bias during research, respondents should be selected based on research benefit, plagiarism etc.

The researcher have therefore understood these ethical issues involved in research study, thus the ethical norms in accordance with The Robert Gordon University (RGU) ethics and governance policy will be adhered to. Also the ethics forms has been filled and by the researcher and signed by the supervisor and been submitted to the research degree office for assessment at the commencement of the research study. The different participants have been asked for consent to participate in this study as the consent form will be administered for endorsement to show willingness for participation. Confidentiality of the respondents will be maintained and unprotected data will be secured by the researcher for a period of time till after a successful graduation to ensure correctly recorded data before disposal.

# **3.11 Research Limitation**

This research is limited to government building projects only as this is just one out of many government construction projects in Nigeria. Due to limited time and resources, the environmental factors affecting the failures of these government building projects as selected by the researcher can only be discussed as one of the major bottlenecks that hinder the progress of such building construction projects in Nigeria. However, other issues like stakeholder issues can be considered in the future research. The literature review have shown the analysis, findings and conclusion of the mentioned factors in this research study. Note that the various information deduced from these literatures may be outdated thus the need to verify and compare to recent findings is needed.

# **3.12 Summary**

This chapter shows that there are various methods and techniques that can be used to undertake a research. Conducting a case study for this research allows for an in depth analysis and provides the researcher with different sources that could be used as supporting evidence. The case study involves the collection of primary and secondary data as support and evidence. Qualitative methods through conducting semi-structured interviews with five members of Nigerian construction industry are used as the main source of reliable information to explore the environmental related factors affecting the industry. Data collected from these sources are applied to

PESTEL Analysis to explore the impact of environmental related factors influencing the failure of government building projects in the country. The use of this analytical method also helps the researcher identify the major environmental related issues in the building construction environment, draw a model that can help the industry understand their environment in the building construction projects.

# **4.0 Analysis of the Nigerian Construction Industry Environment.**

# **4.1 Introduction**

The tool that is used to provide a primary analysis of the general environment of the NCI was the PESTEL, which identifies and discusses the impact of different environmental factors that could impact on the government building projects of the industry. This analysis examines six factors in relation to the NCI’s environment in order to determine how environmental related factors have had an influence on the overall government development building projects. The six environment related factors involved in the PESTEL Analysis include Political, Economic, Social, Technological, Environmental, and Legal issues.

# **4.2 POLITICAL Related Factors**

As discussed earlier, political factors within the building construction environment can include a variety of factors such as political instability, change in government, bribery and corruption, inertia in government bureaucracies, changes in government regulations among others may impact on the industry’s operations in its construction environment. The overall political climate of Nigerian state and the political impacts that could influence the activities of the NCI to improve in the delivery and completion of government building projects have been identified and examined.

Nigeria has been described as a victim of high level of corruption, political instability, bad governance etc. which consequently retards national development and makes the political environment uncertain (Fagbadebo 2007). Discussions with the respondents from the NCI revealed that the uncertainty in political environment of the country greatly affects the progress of development government building projects. Participant A states that:

*“The politically environmental related factors such as change in government regulations and change of power greatly influences development government building construction projects reason being that in an unstable government, awarded contracts of projects like buildings are affected because a new government most times condemns the work of the previous government which leads to review of contract terms thereby causing delay in project execution”*

The dysfunctional state of the Nigerian state have been blamed on political factors such as scarce resources, weak legitimacy and patron-client also known as “godfatherism” in politics (Kesselman et al. 1996). The genesis of these political issues as located by Ake (1995) is the inclement of political and social conditions in developing countries. This gave rise to corruption and indiscipline, lack of entrepreneurial abilities, inertia in government bureaucracies, poor planning and implementations, stifling of market forces etc. He believed that:

*“A government facing the issues of poor planning and implementations, corruption and indiscipline, stifling of market forces directly affects the progress of a government building construction projects as the unstable political environment slows down construction activities”.*

His views demonstrates that poor governance, accountability and transparency in the political system of a country hinders the progress of development building projects. The influence of political related factors on NCI was highlighted in the interviews, with participant C indicating that:

*“Political related environmental factors interrelates other factors as an unstable government delays the execution of building construction projects as time and value of money changes over time leading to cost and time overruns and therefore such projects becomes a failure. The economic related factor are affected here as the value of money changes, the legal factors are also affected as contract terms changes as well”.*

This indicates that political related factors have a great influence on the failure of government building projects and the industry as a whole. Participant D added that:

“*National development of the nation is struggling due the impact of political related factors in the building construction environment hindering the progress of development building projects in the country*”.

# **4.3 Economic Related Factors**

This section of the analysis focuses on the environmental factors in the economic environment of a building construction project as well as its influences in the failure of government building projects. Economic factors such as Economic growth rates, price fluctuations in building construction materials, exchange rate and interest rate policies etc. influences the building construction activities of the NCI in the construction environment. As stated by Ode and Battaineh (2002), in a fluctuating economic environment, the need for a building project to be financially viable is important as this has turned out to be a challenging tasks in building project executions. It was mentioned during the interview that:

“*Material scarcity coupled with import and export restrictions are the main drivers affecting the building projects as low material supply delays projects” (Participant E).*

The above statement implies that restriction of imported and exported construction building materials is affected in the economic environment of a building construction project as supplies to the building sites are been delayed due to restrictions attached to these building materials.

Also considering the periodic economics cycles of most developing countries, the construction industries activities are significantly affected as the forecasting of economic trends are difficult (Oladapo and Olotuah 2007). Participant B in his responses during the interview noted that:

“*Due to market conditions and competitions in economic environment of developing country like Nigeria, the issue of cost estimates for the building materials affects the purchases during building construction process which normally results to cost overruns in building projects and invariably project may be abandoned as a result of poor estimate”.*

This indicates that uncertainty in the economic environment of developing countries affects the estimated cost of building materials as the value of money changes with time. As most building projects are financially limited, Obalola (2006) in his study made it clear that financial forces within the building project environment are different from the economic forces basing his facts that economic forces within the building project environment has to do with resources deployment as financial forces has to do with money.

*“Inappropriate resource smoothing in allocation of resources during a building construction project may lead to failure of such project as most of government building projects are financially limited when contracted (Participant A)”.*

This indicates that the inability of a project manager to allocate resources to achieve optimal resource usage by avoiding high peaks and deep valleys in the project resource profile may lead to project failure.

# **4.4 Social Related Factors**

This section explores the issues involved in the demographic, social and cultural norms in the Nigerian state in order to examine how these factors could potentially influence the progress of building construction projects. As identified in the literature review, social vices in the building construction environment such as unemployment level, education level, age distribution, demonstrations, riots, striking actions due to unpaid salaries, boko haram insurgency etc. influences the progress of building construction project in the social environment of a country. Interviewees believed that social vices in the environment have a great influence on the activities of the NCI stating that:

*“The unemployment level among the youths of the society plays a part in the poor availability of labor force in the society which can also be attributed to poor quality of education in the society” (Participant D).*

“*The issue of insecurity in the building construction environment poses a huge threat to the project managers, contractors and sub-contractors in executing a government building project as the issue of adoption occurs in several communities during project execution (Participant E)”.*

This happens in so many cases in some communities in Nigeria as unemployed youths turn out to be threats to the as they obstruct the activities of building construction activities requesting for compensation from the government before the execution of government projects. This can scare away various employees in the site as they try to be safe.

*“The Boko Haram terrorist group over the years have obstructed so many activities in the country as it is no more safe to execute construction projects in areas where this insurgencies are of high risk (Participant C)”.*

*“The issue of language barrier among the illiterate workforce has been identified as communication problem during the execution of building construction projects in some areas of the country (Participant A)”.*

Socio-cultural factors like languages, norms, values, method of communication among the project workforce can influence the progress of the project. E.g. the oral communication between the illiterate workforces in some regions in Nigeria can be best understood by using the Pidgin English as identified by Engobo (2009) in his study in the Niger-Delta region of Nigeria.

*“Most crimes and demonstrations in the society are caused by unemployed youths in the society as constructions activities are sometimes delayed by riot and demonstration actions in the building construction environment (Participant B)”.*

This indicates that due to idle minds and ignorance among the unemployed youths in the society, crime rates increases which somehow affects the progress of government building project in the construction environment.

# **4.5 Technology Related Factors**

This section examines the current state of technology growth in the Nigerian state as it affects the construction activities of the NCI in the construction environment. The future development of any nation depends largely on technological progress according to World Bank (1995). They assume that growth in per capita income induced by growing productivity is the engine of development. In turn, it is technological progress that drives productivity. The use of obsolete technology in the NCI has accounted for a good number of failed building projects in Nigeria. Participant C stated that:

*“The manual handling of building construction materials which may have a high risk injuries to the labourers in the building construction sites leads to slow progress in executing projects as well as posing a high risk of injuries to the workers”.*

*The traditional use of scaffolding in the construction sites to minimize cost by contractors delays the progress in executing high rise buildings in the country as well as posing a high risk of accidents in the building construction sites (Participant B)”.*

Developing countries are challenged with the lack of technological know-how which forces them to use inappropriate construction technology in building construction activities. The use of these old construction technologies can result to delay during execution of building construction projects and also an increased risks to the workers who are vulnerable and exposed to injuries (Akani et al. 2015). Industry sector serves a propelling force to the technological development in a country, thus both are interdependent and interrelated to each other (Kirkpatrik et al, 1985; Evenson and Wesphal, 1994; Afonja, 2003; Barry and Reddy, 2006). Participant A on answering the question based on technological factors stated that:

*“Due to the inadequate technological infrastructure in place in the NCI, the industry over the years have found it difficult to flourish and move to next level”.*

It can be deduced from the above statement by the interviewee that the NCI lacks the right technological tools which can help to reduce the time overruns and high risks associated with the obsolete technology used in executing government building construction projects. Participant E added that:

*“Provided there is lack of modern building construction equipment in the NCI, delay in the progress of government building project is therefore imminent”.*

This implies that since there is limited provision of these equipment in NCI, the issues of time overruns caused by the use of obsolete technology lingers and it contributes to the failure of building constructions in the country.

#  **4.6 Legal Related Factors**

This section of the analysis explores the legal factors influencing the failure of government building project in the construction environment. It examines the issues involved in contract disputes, litigation, arbitration, and unrealistic contract time frames by contractors, environmental laws and regulations guiding the environment in which building construction activities takes place.

Due to the encountering laws and regulations in the legal environment, building construction projects are being affected by laws such as planning and environmental regulations, safety regulations, codes of practise, licensing, insurance and taxation laws etc. (Akanni et al. 2015). Participant A mentioned that:

“*Disputes may arise during the execution of government building due to unrealistic time frames given by contractors before the commencement a project. Issues such as procurement, supply chain, delay due to the use of obsolete technology etc. can cause delays in project execution”.*

This however indicates that as disputes arises between both parties involved in the contract, building construction might be put on hold to resolve issue which may take a longer time than expected and sometime disputes may eventually lead to court order thereby project is delayed at the process as both clients waits for court judgement.

*“Most times during the life cycle of a building project, legal laws guiding the environment might change as a new government replaces the former and this leads to the review of contract terms and in most cases this forces the clients to abandon the project as the new government might take time to adjust in power (Participant E)”.*

Building contract relationships are been affected by legislation as this directly impacts the activities of clients. As the legislation in Nigeria is based on the British model, the Standard form of Building Contract issued by Joint Contract Tribunal (JCT) was modified to be used in Nigeria as this responsibility is important for stakeholders in the construction industry. The inability of the contractors involved in the government building projects to adjust to the regulations and laws governing the legal environment directly affects the progress of a building project (Oladapo and Olotuah 2007). Participant C stressed on that:

*“The issue of unrealistic time frames in project execution is not intentionally the fault of both parties indicating that some unforeseen circumstances might influence the delay of building projects as the contractor have no power over some issues such as act of god, natural disasters etc.”. He moreover gave example of a mega building construction project which was never completed at the stipulated time of completion. E.g. the Scottish Parliament Building which was scheduled to open in 2001 but never did until 2004 with an estimated final cost of £414 million many times higher than the initial estimates of between £10m and £40m”.*

# **4.7 Environmental Related Factors**

This section analysis examines the environment as it affects the activities of the NCI in building construction environment. The environment in which a building construction project takes place is a complex one as the failure of building projects often depends on the factors in the project’s general environment (Youker 1992). The building construction project environment remains exceptionally uncertain as the environmental conditions can change at any point in time due to the complexities of building construction projects. Respondents emphasise the importance of taking into consideration environmental factors in the building construction project:

*“The construction environment remains uncertain as some factors such as weather conditions, soil textures, ground conditions, topography etc. sometimes delays the progress of a building construction project”(Participant A).*

*“Ground conditions in a building construction site can cause delay in the foundation on the building which invariably increases the estimated cost of the project and time lag.”(Participant B).*

*“The adverse weather conditions in the country have a great influence in the building construction activities as the execution of government building project can be delayed due to too much rain which affects building construction activities”(Participant C).*

*“Topography and ground conditions can make it difficult for excavation activities during foundation as the ground may be hard to excavate which can delay the estimated time of foundation activities and also increase in cost”(Participant D).*

Due to the unproductive nature of a building construction environment, the potential effects of these environmental related factors are of high importance (Bennet 1991). The planned progress and development of a construction project can be interfered by some environmental factors therefore, the failure of the construction companies to understand the environment in which the construction projects takes place and develop a developmental strategy to handle the environmental issues when they surface hereby affects the success of the construction project (Bernett 1991; Youker 1992; Kuye 2004; Muir 2005).

# **4.8 Summary**

The analysis above has demonstrated that the environment in which NCI operates is very complex and can be regarded as very strong at any point in time. A number of factors within this environment have a strong potential to influence on the NCI ability to execute government building construction projects as the failure to consider these factors leads to failure of government development building projects.

As we can see, the analysis of the environmental related factors using PESTLE have shown how the operations and activities of the NCI can be influenced in its building construction environment as the inability to understand the various effects can lead to building project failures.

# **5.0 Conclusions, Recommendations and Further Work**

# **Introduction**

Having studied the case of the NCI based on government building construction projects in the previous chapters, this part of the research aims to point out and conclude what has been found from this research. Specific questions that have been addressed in chapter one as the main research questions are considered here include: How can building construction projects be analysed to determine failures? What are the environmental factors that influence building project failures? What effects can the identified environmental related factors cause on government building projects? The discussion here shows that environmental related factors in the building construction environment greatly influences the failure of government building projects in the Nigerian state. Overall these factors have proved to be of great influence to the failure of construction projects. In addition, this chapter also evaluates the strengths and limitations of this research, and highlights how further research should be conducted.

# **5.2 How can building construction projects be analysed to determine failures?**

This research question is aimed at understanding of what can be identified as a failed building construction project. This allowed for analysis and results from the research participants to identify the different factors influencing the failure of construction building projects in construction industries of developing countries.

When the research participants were first asked to identify what they think are the major causes of the issues of building construction projects failures in developing countries bearing in mind that so many factors can contribute to the failure of building construction projects especially in developing countries. Most responses gotten from the participants as the major driving factor influencing building project failures were the issues of economic related factors in the building construction environment which leads to cost and time overruns in most of the building construction projects forcing these projects to be abandoned. Cost and time overruns in building construction projects can be caused through different environmental related factors in the project environment.

The literature review and case study of the NCI provided considerable information on the environmental related factors which may lead to cost and time overruns in building construction projects of developing countries. Political, economic, social, technology, environmental and legal related factors in the project environments are the key factors influencing the failure of most building construction projects in developing countries (Ansah 2016).

# **5.3 What are the environmental factors influencing building project failures?**

The building construction environment has been described as a complex one in which several uncertainties exist. Failure to scan the construction environment to be aware of such uncertainties in the project execution phases greatly impacts significantly to the failure of the building construct projects. The environmental related factors which influences the failure of building projects can be classified into political, economic, social, technological, environmental and legally related in the building construction environment.

As observed by Mansfield et al. (1994), political issues such as political instability, national disunity, poor leadership, inertia in government bureaucracies etc. results to an unstable government which produces an unstable environment for the construction of development buildings in developing countries. Economic related factors in a project environment stirs up the issues of inefficiency in cost of the building construction. Ashworth (2010) noted that factors such as change in market conditions, time value of money, taxation, exchange rate and interest rate policies, import and export restrictions etc. are some of the major economic factors influencing the progress of building construction projects. Social related issues such as insecurity, unemployment level, availability of labour, language barrier among the illiterate workforce among other social vices in the construction environment can influence the failure of building project (William 2002). Developing countries are challenged with the lack modern technologies in the construction industries which results to delay and high estimated cost of building construction activities. Akanni et al. (2015) identified that the lack of technology know-how in developing countries slows down the pace at which construction activities are carried out. Change of environmental laws and regulation guiding the construction environment are the major legal related factors influencing the building project failures as mentioned by Thomas and Martin (2004). Youker (1992) stated that the failure or success of a construction project depends on its environmental conditions at any point in time.

From primary observations, the various research participants also noted that for a building construction project to be a success the above mentioned environmental related factors must be considered as most of the failed building construction projects can be traced to be influenced by these factors.

# **5.4 What effects can the identified environmental related factors cause on government building projects?**

Literature and primary observations have shown that the construction industry plays a vital role for the continuous growth of a country’s economy as every aspect of the economy is affected by their activities. Successful construction projects in a nation supplies the country with necessary infrastructures which are needed for the development of other sectors of the country’s economy (Leah 2011). World Bank (1984) stated that the interrelation between the construction industries and other economic sectors in a country makes it an important sector for the growth and development of a country’s economy.

However, the effects of these identified and analysed environmental related factors will undoubtedly contribute to the stagnant growth of most of the developing countries and directly affect the economic growth (Ubani and Ononuju 2013). Due to the failure of most government development buildings constructions in Nigeria, the state is mostly behind some other developing countries like Malaysia and Singapore (Ogbegbor 2002). The political instability in Nigeria have contributed to the failure and abandonment of important development building projects such as the National Library Building project in the capital city of Abuja, Science and Technology Building Complex in Mbaise, Imo state, Joint Admission and Matriculation Board Building in Abia State, all in Nigeria to mention a few.

Overall, this study will make a significant heads up to the various parties involved in government building construction projects to be aware of the great importance it is to understand the complex environment in which a building construction project takes place to minimize and eradicate the effects of these identified factors for the improved success of government building projects in Nigeria and other developing countries (Youker 1992).

# **5.5 Recommendations**

The research findings in this study therefore recommends that;

1. The project managers, contractors and subcontractors involved in the execution of government building projects should do a proper scanning of the environment in which such projects takes place to reduce and have a proper management plan in place to deal with these factors which influences the building project failures.
2. A proper project management practise should be put in place by the Nigerian construction industry were project governance can help monitor and control the activities of various participants in the construction industry.
3. The government should encourage the construction industry by helping eliminate the use of obsolete technology in building constructions by promoting the use of modern technologies through investing in the Nigerian technology sector.

# **5.6 Further Work**

Due to the limited time and resources given for this study and various assumptions made, I will suggest that this research study can be taken up further across certain boundaries such as;

* A similar study on the other effects the environmental related factors can cause on government construction projects.
* A similar study for other factors which influences the failure of government building projects.
* A further research on other government construction projects e.g. roads, bridges, railways, telecommunications etc.
* A study on the impact of various stakeholders involved in government construction projects and their influences.

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# **Appendices**

# Appendix A Interview questions

Interview Guide

Interviewee Background

Q1. Would you mind telling me your name and your current position?

Semi-structured questions

Q2. How will you determine the failure of a building project?

A.

Q3. How does environmental related factors affect the progress of a building project?

A.

Q4. How does the political related environmental factors influence the failure of a government building project?

A.

Q5. How has the economical related environmental factors affected the progress of a building construction project?

A.

Q6. How has the technological environmental related factors impacted in the failure of government building projects?

A.

Q7. how has the legal related environmental factors influenced the failure of government building projects?

A.

Q8. How has the social related environmental factors contributed to the failure of building projects?

A.

Q9. How has the environmental related factors influenced the failure of government building projects?

A.

Q9. Which of these environmental related factors has the most significant effect in the failure of government building projects?

# **Appendix B**

# **Summary of environmental issues influencing government building projects in Nigeria.**

|  |  |
| --- | --- |
| **Categories**  | **Causes**  |
| Political  | * Changes in government regulations.
* Bribery and corruption.
* Inertia in government bureaucracies.
* Environmental and labour laws.
* Licencing, permits, approvals.
* Change of government departmental heads.
 |
| Economical | * Import and export restrictions.
* Exchange and interest rate policies.
* Economic growth rates.
* Price fluctuations.
* Market competitions and conditions.
* Difficulty in accessing credit facilities.
* Change in taxation.
* Fluctuation of fuel prices.
* Materials scarcity.
 |
| Social  | * Unemployment level.
* Labour availability.
* Work attitude and respect for leaders
* Education level.
* Age distribution.
 |
| Technological | * Usage of old methodologies.
* Lack of technical knowhow.
* Equipment availability, its tools and parts.
* Obsolete technology and tools.
* Lack of training programs on technology.
* Inefficient dissemination of information.
 |
| Legal | * Unrealistic contract time frames.
* Contracts disputes, litigation and arbitration.
* Environmental regulation procedures.
* Licensing and permit regulations.
 |
| Environmental | * Act of God.
* Topography.
* Ground conditions.
* Fluctuations in weather conditions.
 |